REMARKS

I. Introduction

In response to the Office Action dated August 11, 2004, Applicants have amended claims 11-21 so as to further clarify the claimed subject matter. Support for these amendments can be found, for example, in Fig. 8 and its corresponding section of the specification. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

II. The Rejection Of Claims 1, 4-6, 11, 13-14, 19 and 32-35 Under 35 U.S.C. § 102

Claims 1, 4-6, 11, 13-14, 19 and 32-35 are rejected under 35 U.S.C. § 102 as being anticipated by USP No. 6,445,739 to Shen. Applicants respectfully traverse this rejection for at least the following reasons.

Claims 1 and 11 recite in-part a bitstream transcoding method comprising a step of leaving as is only one "non-zero" coefficient encountered first in scanning in the DCT block detected to contain the DCT coefficient and transcoding all the other DCT coefficients to "0."

In accordance with one embodiment of the present invention, the DCT coefficients reducing means 102 performs the required DCT coefficients reducing processing for the incoming bitstream upon receiving the instruction signal, which transcodes all DCT coefficients but one "non-zero" coefficient (run level information appearing first) encountered first in scanning in the DCT block to "0," leaving an end-of-block (EOB) code (see, e.g., page 15, lines 15-21 of the specification). The foregoing transcoding method allows a reduction in the quantity of codes without the need to update

the address counter due to the generation of a skip macro block (SMB) (see, e.g., page 3, lines 19-29 of the specification).

Turning to the cited prior art, the Examiner asserts that Shen discloses, at col. 5, lines 45-60 and col. 8, lines 10-15, detecting whether a relevant DCT block contains a DCT coefficient in a macro or intra-macro block, and further discloses, at col. 5, lines 20-34 and col. 7, lines 20-32, leaving only a DC coefficient and transcoding all the other AC or DCT coefficients to "0."

However, contrary to the conclusion set forth in the pending rejection, at the cited portions, Shen discloses providing a default quantization matrix (QM) generator 46 for storing default quantization elements aligned in matrix, where the default quantization elements are read out in a zigzag format by the zigzag scan 48. Shen also discloses that when the truncator 40 reads a preset number of the particular quantization elements in the matrix, the zigzag reading by the QM of the block 38 is terminated. Thereafter, an end code, such as zero, is **added** by an end code adder to the end of the preset number of the particular quantization elements at the truncation point, where the preset number is determined by the setting unit 39 operated manually by an user or automatically relatively to the type or quality of the picture. Shen further discloses a scaling factor S for weighting or scaling the first value of the QM so as to adjust the quantizer for the DC coefficient.

As such, Shen does not disclose or suggest leaving only **one** "non-zero" coefficient and **transcoding all the other** DCT coefficients to "0," as recited by claims 1 and 11. Indeed, as readily shown in Figs. 6-8, Shen specifically discloses reading out the first thirteen elements of the matrix before termination of the zigzag reading, where these thirteen elements are then sent to the synthesized QM generator 54, and that the same quantization elements and the added end code (i.e. QMt) are also sent to the end code decoder 56 (see, Fig. 5 and col. 5, lines 32-43). In other words, Shen does not transcode the truncated elements (e.g. the first 13 elements) to "0" so as to leave only

one "non-zero" coefficient. Rather, it would appear that Shen merely discloses leaving the first thirteen "non-zero" elements, and adding zeros at the truncation point. Thus, at a minimum, Shen does not disclose or suggest a bitstream transcoding method comprising a step of leaving as is only one "non-zero" coefficient encountered first in scanning in the DCT block detected to contain the DCT coefficient and transcoding all the other DCT coefficients to "0," as recited by claims 1 and 11.

Furthermore, claims 4 and 13 recite in-part a bitstream transcoding method comprising a step of leaving as is only a DC coefficient in the DCT block detected to contain the DCT coefficient in the intra-macro block and transcoding all the other AC coefficients to "0." The Examiner asserts that Shen discloses, at col. 7, lines 20-32, the foregoing elements (see, page 3 of Office Action).

However, contrary to the conclusion set forth in the pending rejection, at the cited portion, Shen discloses a scaling factor S that is adjusted based on the activity of each individual block as weighting for the DC coefficient, where the activity information can be obtained by checking the number of the AC coefficients left after quantization. As such, Shen does not disclose or suggest transcoding all AC coefficients other than the DC coefficient to "0" in the manner alleged by the Examiner. Rather, Shen merely discloses leaving the non-zero values (e.g., x1, x2, ..., x9) (i.e., NOT all the other AC coefficients) in the truncated quantization matrix for quantizing the 8x8 DCT coefficient block, and obtaining the scale factor S for scaling up and down the first value (i.e., x1) to adjust the quantizer for the DC coefficient by checking the number of AC coefficients left after quantization. Thus, at a minimum, Shen fails to disclose or suggest a bitstream transcoding method comprising a step of leaving as is only a DC coefficient in the DCT block detected to contain the DCT coefficient in the intra-macro block and transcoding all the other AC coefficients to "0," as recited by claims 4 and 13.

Moreover, claims 5 and 14 recite in-part a bitstream transcoding method comprising a step of transcoding all the other DCT coefficients to "0" based on the data structure analyzing result. Claims 33-35 recite in-part a bitstream transcoding method comprising a DCT coefficients reducing means for transcoding all the other DCT coefficients to "0" based on a data structure analyzing result. The Examiner asserts that Shen discloses, at col. 5, lines 45-60, the foregoing claim elements.

However, at the cited portion, Shen discloses utilizing an end code adder to add an end code, such as zero, to the end of the preset number of the particular quantization elements, where the preset number is determined by the setting unit 39 (see, col. 5, lines 26-29). As such, contrary to the Examiner's assertion, Shen is silent to transcoding all the other DCT coefficients to "0" based on any data structure analyzing result. In contrast, Shen discloses adding an end code to a preset number of elements based on the predetermined number set by the setting unit 39. Thus, at a minimum, Shen fails to disclose or suggest a bitstream transcoding method comprising a step of transcoding all the other DCT coefficients to "0" based on the data structure analyzing result, as recited by claims 5 and 14, or a bitstream transcoding method comprising a DCT coefficients reducing means for transcoding all the other DCT coefficients to "0" based on a data structure analyzing result, as recited by claims 33-35.

As anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983)*, and at a minimum, Shen fails to disclose the foregoing claim elements, it is clear that Shen does not anticipate claim 1, 4-5, 11, 13-14, 33, 34 or 35, or any of the claims dependent thereon.

III. The Rejection Of Claims 9-10 and 17-18 Under 35 U.S.C. § 103

Claims 9-10 and 17-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shen. Applicants respectfully traverse these rejections for at least the following reasons.

Claims 9, 10, 17 and 18 recite in-part a bitstream transcoding method comprising a step of transcoding **all** DCT coefficients in the DCT block of the chrominance signal concerned in the detection to "0."

In accordance with one embodiment of the present invention, the DCT coefficients reducing means 102 transcodes all the DCT coefficients in the DCT block of the chrominance signal to "0" for the incoming bitstream when having received the instruction signal. Also, the code detecting means 101 has a function for leaving only one "non-zero" coefficient encountered first in scanning in the DCT block to thereby transcode all the other DCT coefficients to "0" and leave the EOB code unchanged. Thus, for a DCT block of the chrominance signal, its CBP is transcoded to such a CBP that has no DCT coefficient. Then, all the DCT coefficients in the DCT block of that chrominance signal are transcoded to "0." The DCT coefficients reducing means 102 performs the foregoing processing on the incoming bitstream to thereby reduce its quantity of codes (see, e.g., page 27, lines 16-33 of the specification).

Turning to the cited prior art, the Examiner admits that Shen does not disclose or suggest a chrominance signal processing, but alleges that it would have been obvious to one ordinary skill in the art to have the color information converted to chrominance information.

However, as discussed above, Shen merely discloses reading out the first thirteen elements of the matrix before termination of the zigzag reading, where these thirteen elements are then sent to the synthesized QM generator 54, and that the same quantization elements and the added end code (i.e. QMt) are also forwarded to the end code decoder 56 (see, Fig. 5 and col. 5, lines 32-43). As

such, Shen does not appear to disclose or suggest transcoding all DCT coefficients in the DCT block of a chrominance signal, if any. Rather, Shen merely discloses adding zeros at the truncation point in place of the numbers after the thirteenth element. The Examiner has neither identified which element of Shen corresponds to the claimed chrominance signal. Thus, at a minimum, Shen does not disclose or suggest a bitstream transcoding method comprising a step of transcoding all DCT coefficients in the DCT block of the chrominance signal concerned in the detection to "0," as recited by claims 9, 10, 17 and 18.

As each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and Shen fails to do so, it is respectfully submitted that claims 9, 10, 17 and 18 are patentable over the prior art.

IV. The Rejection Of Claims 2-3, 7-8, 12, 15-16, 22-28, 30-31 and 36-38 Under 35 U.S.C. § 103

Claims 2-3, 7-8, 12, 15-16, 22-28, 30-31 and 36-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shen in view of USP No. 6,310,919 to Florencio. Applicants respectfully traverse these rejections for at least the following reasons.

Claims 2 and 12 recite in-part a bitstream transcoding method comprising a step of leaving as is only a DC coefficient in the DCT block detected to contain the DCT coefficient in the inter-macro block and transcoding all the other AC coefficients to "0."

In accordance with one embodiment of the present invention, the DCT coefficients reducing means 102, when having received the instruction signal, performs the required DCT coefficients reducing processing on the incoming bitstream. The foregoing processing extracts codes that correspond to the DCT coefficients in the MB, and transcodes all the AC coefficients other than the

DC coefficients in the DCT block to "0." The foregoing processing, however, leaves the EOB code un-transcoded. If the DC coefficient is "0," a predetermined AC coefficient is also added. The DCT coefficients reducing means 102 performs the foregoing processing on the incoming bitstream to thereby reduce the quantity of codes (see, e.g., page 19, line 31 to page 20, line 10.

Turning to the cited prior art, the Examiner admits that Shen does not disclose or suggest having the inter-macro block accompanied by a predictive coding such as a motion vector, and relies upon Florencio to cure these deficiencies.

However, Shen is silent to leaving **<u>only a</u>** DC coefficient in the DCT block detected to contain the DCT coefficient in the inter-macro block and transcoding all the other AC coefficients to "0," as recited by claims 2 and 12. Indeed, as discussed above, Shen merely discloses reading out the first thirteen elements of the matrix before termination of the zigzag reading, where these thirteen elements are then sent to the synthesized QM generator 54, and that the same quantization elements and the added end code (i.e. QMt) are forwarded to the end code decoder 56 (see, Fig. 5 and col. 5, lines 32-43). In other words, it would appear that Shen only discloses leaving the first <u>thirteen</u> "non-zero" elements and adding zeros in place of the elements after the truncation point, and does not disclose or suggest leaving only a DC coefficient and transcoding the remaining elements to "0." Neither is Florencio relied upon to cure this defect of Shen. Thus, at a minimum, Shen does not disclose or suggest a bitstream transcoding method comprising a step of leaving as is only a DC coefficient in the DCT block detected to contain the DCT coefficient in the inter-macro block and transcoding all the other AC coefficients to "0," as recited by claims 2 and 12.

Furthermore, claims 7, 8, 15 and 16 recite in-part a bitstream method comprising a step of transcoding <u>all</u> DCT coefficients in a macro block concerned in the detection to "0." As discussed above, Shen only discloses leaving the first thirteen elements of the matrix before termination of the

zigzag reading and adding zeros at the truncation point. Nowhere does Shen disclose or suggest transcoding the alleged DCT coefficients in any macro-block to "0." Thus, at a minimum, Shen fails to disclose or suggest a bitstream method comprising a step of transcoding all DCT coefficients in a macro block concerned in the detection to "0."

Moreover, claims 36-38 recite in-part a computer-readable recording medium for use in bitstream transcode recoding a program for executing a procedure for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of the input bitstream and transcoding all the other DCT coefficients to "0."

However, Shen discloses utilizing an end code adder to add an end code, such as zero, to the end of the preset number of the particular quantization elements, where the preset number is determined by the setting unit 39 (see, col. 5, lines 26-29). As such, contrary to the Examiner's assertion, Shen is silent to transcoding all the other DCT coefficients to "0" based on any data structure analyzing result. In contrast, Shen merely discloses adding an end code to a preset number of elements based on the predetermined number set by the setting unit 39. Neither is Florencio relied upon to cure this defect of Shen. Thus, at a minimum, Shen fails to disclose or suggest a computer-readable recording medium for use in bitstream transcode recoding a program for executing a procedure for leaving as is at least one "non-zero" DCT coefficient of DCT coefficients in a DCT block of the input bitstream and transcoding all the other DCT coefficients to "0," as recited by claims 36-38.

As each and every limitation must be either disclosed or suggested by the cited prior art in order to establish a *prima facie* case of obviousness (see, **M.P.E.P. § 2143.03**), and Shen fails to do so, it is respectfully submitted that claims 2-3, 7-8, 12, 15-16, 22-28, 30-31 and 36-38 are patentable over the prior art.

V. All Dependent Claims Are Allowable Because The Independent Claims From Which They Depend Are Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co., 819 F.2d at 1100, 1108 (Fed. Cir. 1987).* Accordingly, as claims 1, 5 and 19 are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also in condition for allowance.

For all of the foregoing reasons, it is submitted that claims 3, 6, 19-32 are patentable over the cited prior art. Accordingly, it is respectfully submitted that the rejections of claims 1, 4-6, 11, 13-14, 19 and 32-35 under 35 U.S.C. § 102 and claims 2-3, 7-10, 12, 15-18, 20-31 and 36-38 under 35 U.S.C. § 103 have been overcome.

VI. Conclusion

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited.

If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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